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growing a few feet from the edge of the water. Is this form found in other places?

I have collected from the same rootstock (I think) in two successive years, two specimens of *Trillium erythrocarpum* Mx., with pistillate flowers and nine petals. The extra petals took the place of the stamens, and were colored like the others, but were somewhat smaller in size.—S. N. COWLES, *Otisco, N. Y.*

THE CEDARS OF LEBANON.— Dr. Hooker makes the following interesting communication to a recent number of the "Gardeners' Chronicle":—"The Rev. M. Tristam, F. L. S., informs me of a most interesting discovery lately made in the Lebanon, *viz.*, of several extensive groves of cedar trees, by Mr. Jessup, an American missionary, a friend of his own, to whom he pointed out the probable localities in the interior. Of these there are five, three of great extent, east of 'Ain Zabalteh,' in the southern Lebanon. This grove lately contained 10000 trees, and had been purchased by a barbarous Sheikh, from the more barbarous (?) Turkish government, for the purpose of trying to extract pitch from the wood. The experiment of course failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees measured fifteen feet in diameter, and the forest is full of young trees, springing up with great vigor. He also found two small groves on the eastern slope of Lebanon, overlooking the Buka'a, above El Medeük; and two other large groves containing many thousand trees, one above El Baruk, and another near Ma'asiv, where the trees are very large and equal to any others; all are being destroyed for firewood. Still another grove has been discovered near Duma, in the western slope of Lebanon, near the one discovered by Mr. Tristram himself. This gives ten distinct localities in the Lebanon, to the south of the originally discovered one, and including it. Ehrenberg had already discovered one on the north of that locality, and thence northwards the chain is unexplored by voyager or naturalist."—*Quarterly Journal of Science, London.*

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## ZOÖLOGY.

THE CROW A BIRD OF PREY.—In confirmation of what Mr. Naumann has stated in regard to the crow as a "bird of prey," Mr. H. G. Bruckart, of Silver Spring, Lancaster County, stated before the Linnæan Society, of Lancaster City, at its January meeting, that in his neighborhood it is not an uncommon occurrence, and especially not in the spring of the year, when they have had a winter's fast, and hens take their young broods abroad. Indeed he has known them to venture into barn-yards, and carry off young chickens. We *know* that the corvine appetite craves the eggs of other fowls, and this characteristic is only a farther advance in that direction. We have now a formidable "Crow Roost" on the Conestogo, in this county, about six miles south of Lancaster City, but with their usual cunning, I have not yet learned that they "tease sheep near home." The gentleman upon whose farm the "roost" is located, says they rise up every morning, and after forming four divisions, the one flies east, another west, another north, and another south, returning again in the evening. About the same number fly in these same directions, and about the same hours every day.—S. S. Rathvon.

How to collect Myriapods.—The following letter from the late Mr. Newport of England, was written to his friend, Mr. Doubleday, of the same country. The latter had volunteered the services of Dr. T. W. Harris, with whom he had formed a close intimacy during his sojourn in this country, in collecting material to aid Mr. Newport in his studies upon the Myriapods. Mr. Newport was one of the highest authorities in this group. As it gives, in a familiar form, the more important directions necessary for collecting Myriapods (Centipes, etc.), we publish it hoping to call attention to these interesting animals. Those who wish to study our native species, are referred to the papers of Dr. Wood, in the Proceedings of the Academy of Natural Sciences of Philadelphia, and in the Transactions of the American Philosophical Society, 1865.

10 Upper Southwick Street,
Cambridge Terrace, Dec. 22, 1842.

Fig. 23.

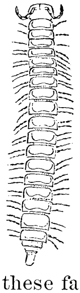
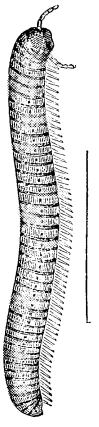


Fig. 24.



My Dear Sir:—In accordance with your suggestion, I now send you a few observations respecting those Myriapods which I so much desire to possess. You are aware that I should be delighted to obtain any specimens of Myriapods from the United States, and that the *localities* being added would make them much more valuable. I would suggest that instead of drying the specimens, the whole be preserved in strong spirit, as a great many may be stowed away in that manner without receiving any injury, and can afterwards be dried, if required, as specimens for the cabinet. As far as my own wishes are concerned, I would much prefer all specimens in spirit, and should be greatly obliged by having as many specimens, even of the same species, as can be collected. There cannot be too many, especially of the true *Scolopendra*, *Cermatia*, *Lithobii*, *Glomeridæ* and *Polydesmidæ* [Fig. 23, *Polydesmus erythropygus* Brandt]. The last two of these families, owing to the great hardness and impenetrability of their tegument, do not preserve well, unless the spirit can be made to enter their interior. I would suggest, therefore, that every specimen of these two families, as well as of the true *Juli* [Fig. 24, *Julus multistriatus* Walsh] and the *Cermatia*, or Shield-bearers, be once or twice pierced with a strong needle in the middle and posterior parts of the body, to allow the spirit to enter. They would then be well preserved and fit for an examination of their interior anatomy, which is my object in obtaining many specimens of the same species. If I understood you rightly, the *Cermatia* are very common in America. I am exceedingly glad, as I cannot yet obtain any of these specimens for dissection. I am not aware whether any of the large Glomeridæ, the proper Sphærotheridæ of Brandt, are found in America, as I should expect they might be. These would be very desirable. You are quite aware that young and immature specimens are often found more easily, and in greater numbers, than the full grown and more perfect specimens. This is especially the case with the Myriapoda, which often swarm in the immature state under the rotten bark of trees or felled timber. Now these *very young* specimens, of all species, are too much neglected by naturalists, and I am particularly desirous of obtaining them. I would recommend that a large quantity of the *very smallest Scolopendra* [Fig. 25, *Scolopocryptops 6-spinosa* Say; from Iowa], Scutigeridæ or *Cermatia*, Polydesmidæ, Cryptops, and Juli be collected. If your friend Mr. Harris could obtain them for me, I should feel greatly obliged. The state in which these species are most interesting to me is when they do not exceed *one-fourth* or *one-half of an inch* in length. My usual mode of collecting the young Lithobii, of this country, is to have one or two phial bottles filled with rectified *spirits of wine*, and when I see any of the little mortals running away and about to give one *leg bail*, just to wet my finger with saliva and place it upon them, when, of course, they adhere to it and are easily washed off by placing my finger on the mouth of the phial and shaking the spirit against it; or by washing the finger in the spirit itself. If your friend, by chance, should meet with any eggs of the Shield-bearers, or other genera, they would be very desirable, and would, I have no doubt be perfectly preserved in phials filled with light mould. The young *Scolopendra*, or *Lithobius* [Fig. 26, *L. Americanus* Newp.], or *Cryptops*, or Scutigeridæ, must not be put together *alive* in the same phial, as they destroy each other, but the large *Scolopendra* may be preserved alive, singly, in wooden boxes, with moistened earth, for several weeks, especially if the earth be impregnated with animal matter. I should be very glad to obtain the *Polydesmus Virginiensis* of Drury (*Fontaria Virginiensis* of Gray), and all of these species may be placed together in tin or wooden boxes, without injuring each other, if, supplied with some vegetable mould, rotten leaves, or bark. As a general rule, all the true Chilognatha may be placed together, but the Chilopoda, with the exception of the Geophili, destroy each other. The Geophili [Fig. 27, *Geophilus bipuncticeps* Wood; from Iowa] I preserve in bottles with vegetable mould and rotten bark, enclosing the mouth of the phial with a piece of bladder,

Fig. 25.

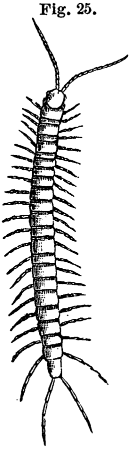


Fig. 26.

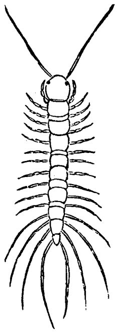
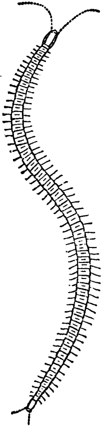


Fig. 27.



which keeps the specimen secure, and at the same time admits sufficient air for respiration. In this way I have preserved Geophili in the same phial with Juli for many months, and it is better than closing the bottle with a cork.

I think, my dear sir, I have now given you a pretty good list of my desiderata, but I would also, just add, that a collection of Scorpions and Phalangidæ would be equally acceptable. Of these things, as well as of the Myriapods, I would suggest that the very smallest, as well as the very largest specimens of the same species, be collected and preserved in the same way in spirit. In all cases, if the weather be warm, the spirit should be changed when the specimens have been in it for about a month, otherwise they may become rotten and unfit for dissection.

With many thanks for your kindness, I remain, dear sir,

Yours, faithfully,
E. DOUBLEDAY, Esq. GEORGE NEWPORT.

ON THE DRUMMING OF THE RUFFED GROUSE.*—A writer in "Harper's Magazine" for October, in an article which he heads "Our neighbors the Birds," in speaking of the drumming of the ruffed grouse, says: "the bird resorts to a fallen trunk of a tree or log, and while strutting like a male turkey, beats his wings against his *sides* and the *log* with considerable force."

It is a strange thing that a writer who seems to be familiar with birds should make such a statement. He is not singular, however, in this matter, for most if not all writers whose statements I have examined, seem to be of opinion that the drumming is produced by beating the log or their bodies with their wings; neither of which operations could possibly produce the *hollow* sound which the bird produces. I have not access to Audubon's works, and do not know his opinion. So good an observer as he was is not likely to be mistaken in the matter, and I should like to know his opinion.†

The writer in Harper is mistaken when he says the grouse drums while strutting, like a turkey. He stands perfectly still and erect, stretching himself as high as possible, and produces the drumming sound by striking the *convex surfaces* of his *outstretched wings together behind his back*, just as you often see boys swinging their outstretched arms behind them, so as to make the backs of their hands meet behind, and opposite the spine. This is the truth and the whole matter.—DR. RUFUS RAYMOND, *Brookville, Ind.*

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* Communicated to the Smithsonian Institution.

† Audubon, on page 216 of Vol. I of his Ornithological Biography, says, "The drumming is performed in the following manner: The male bird, standing erect on a prostrate decayed trunk, raises the feathers of its body in the manner of a turkey-cock, draws its head towards its tail, erecting the feathers of the latter at the same time, and raising its ruff around the neck, suffers its wings to droop, and struts about on the log. A few moments elapse, when the bird draws the whole of its feathers close to its body, and stretching itself out, beats its sides with its wings, in the manner of the domestic cock, but more loudly, and with such rapidity of motion, after a few of the first strokes, as to cause a tremor in the air not unlike the rumbling of distant thunder."—EDITORS.

Hatching of the Seventeen-year Cicada.—With reference to the eggs and young of the Seventeen-year Cicada, your correspondent from Haverford College, Philadelphia, is not the only one who has failed to produce the young, by keeping branches containing eggs in their studios. I so failed in 1834 and 1851, and indeed I have never heard that any one has succeeded in that way, who has kept them for any great length of time. In the brood of 1868, the first Cicadas appeared here in a body, on the evening of the 2d day of June. The first pair *in coitu*, I observed on the 21st, and the first female depositing on the 26th of the same month. The first young were excluded on the 5th of August. All these dates are some ten days later than corresponding observations made by myself and others in former years. On the 15th of July I cut off some apple, pear and chestnut twigs containing eggs, and stuck the ends into a bottle containing water, and set it in a broad shallow dish also filled with water, the whole remaining out of doors exposed to the weather, whatever it might be. The young continued to drop out on the water in the dish, for a full week, after the date above mentioned. I could breed no Cicadas from branches that were dead and on which the leaves were withered, nor from those that from any cause had fallen to the ground, and this was also the case with Mr. Vincent Bernard, of Kennet Square, Chester County, Pa. After the precise time was known, fresh branches were obtained, and then the young Cicada were seen coming forth in great numbers, by half a dozen observers in this county. As the fruitful eggs were at least a third larger than they were when first deposited, I infer that they require the moisture contained in living wood to preserve their vitality. When the proper time arrives and the proper conditions are preserved, they are easily bred, and indeed I have seen them evolve on the palm of my hand. The eyes of the young Cicadas are seen through the egg-skin before it is broken.—S. S. Rathvon, *Lancaster*, *Pa.*

Preparation of Bird's Eggs.—The season for collecting eggs has now commenced, and it may be of interest to those engaged in oölogy to know the best method of preparing the egg for the cabinet. As a writer in this journal (Vol. II, p. 487) has gone somewhat into detail on this subject, I will only add the more recent improvements in this branch of Natural History. Until within a few years eggs were blown with two holes, one at each end, or two holes in the side, as seen in the drawing on p. 487, Vol. II. Now, oölogists desire the egg blown with only one hole, and that on the side. This is the only way now adopted by our best collectors. By placing the hole downward nothing but the perfect egg is visible; or what is still better, place the number (according to the Smithsonian Catalogue) over the hole, with the number in sight; then every person, whether familiar with oölogy or not, can tell the egg by referring to the catalogue. The common blowpipe is generally used to remove the contents of the egg. If the hole is a little larger than the point of the blowpipe, the inside passes out around the instrument. If the aperture is no larger than the point, by forcing air into the egg, and withdrawing the pipe, a part of the contents will follow, and by repeating the process several times you can empty the shell. Then fill the blowpipe with water and force it into the shell several times, shake it well, and then blow out the water; repeat it until it is perfectly clean. Be very particular, especially with white eggs, or dark spots will appear after a time, which make the egg worthless. It was while I was blowing a box of about one hundred eggs of Wilson's Tern (*Sterna Wilsoni*) that Mr. Ellsworth suggested to me a new invention for blowing them. The result is, I can now prepare one hundred eggs in less time than I formerly could ten, and much better, doing all the work with my hands that heretofore has been a severe tax upon my lungs. I will not now describe the instrument, but will say, in brief, that it is invaluable to the oölogist. I would not part with mine for ten times the cost ($3.10) if I could not replace it. This is the testimony of all who have used them. If any collector wishes to obtain this valuable instrument, the inventor, Mr. E. W. Ellsworth, of East Windsor Hill, Connecticut, will supply them. —WM. WOOD, *East Windsor Hill, Conn.*

THE VISION OF FISHES AND AMPHIBIOUS REPTILES.—M. F. Plateau has advanced the theory "that these animals can see distinctly in the air, and that their distance of distinct vision must be nearly the same in this medium and in water. Although fishes, with the exception of some privileged species, such as the Eel, the Chironectes, and the Climbing Perch, have hardly any need for combining the faculty of seeing distinctly in water with that of seeing distinctly in the air, this double faculty is evidently indispensable to the Amphibia."—*Annals and Magazine of Natural History.*

FLIGHT OF BIRDS.—Will you inform us how sailing birds remain suspended in the air? Last summer while standing with Prof. Mudge, on the high bluff of the Kaw, opposite Manhattan, Kansas, a large bird, supposed to be *Cathartes aura*, rose from the opposite margin of the river, and accomplished a spiral flight of over five minutes duration, supposed to be more than five hundred feet in height, and a mile in linear extent, against a wind blowing about "three" on the Smithsonian scale, without flapping his wings but *once*, and that was apparently to preserve his balance.

The following suggestions have been made: 1. Birds in sailing do not rise above the initial point, but use their wings as parachutes, like the flying squirrel. The turkey buzzard, mentioned above, rose about three times as high as the bluff. 2. Extended sailing like this is due to the momentum gained by previous flight. The turkey buzzard in this case rose from a perch at the river's brink. 3. Short quills under the wings are used, while the wings proper are stationary! 4. Birds sail against the wind like ships. The resultant force of the sail and keel may be resolved into two forces, one lying in the line of direction of the ship's path. How with birds? Do not sailing birds accomplish the spiral flight when the air is comparatively still? 5. The air raised to a temperature of 103° Fahr. by the heat of the bird, fills the quills, hollow bones and cavities of the body, and buoys it up. Shoot a hawk or buzzard while sailing, and down he tumbles from his airy perch. Does his body cool as soon as that?

Not one of these suggestions seems to be sufficient. Do they when combined? Will you please enlighten us?—JOHN D. PARKER, *Topeka, Kansas.*

DEEP-SEA DREDGING NORTH OF SCOTLAND—Drs. W. B. Carpenter and Wyville Thompson report to the Royal Society that the recent dredging expedition to the Farœ banks has "obtained evidence of the existence, not of a degraded or starved out residuum of animal life, but of a rich and varied fauna, including elevated as well as humble types, at a depth of 530 fathoms." "Their researches have conclusively established the existence of a temperature as low as 32° over a considerable area of sea bottom, where the depth was 500 fathoms and upwards, notwithstanding that the surface-temperature varied little from 52°." They argue that there is a stratum of sea water with a temperature of 32°, or even 28°, and the existence of such strata even in equatorial regions, has been regarded by high scientific authorities as proving the existence of deep currents, bringing cold water from polar regions to replace the warmer water that is continually flowing as (notably) in the Gulf Stream, from the equatorial towards the polar regions, as well as to make good the immense loss which is constantly taking place by evaporation from the surface of tropical seas." "The examination which Prof. Huxley has been good enough to make of the peculiarly viscid mud brought up in our last dredging at the depth of 650 fathoms, has afforded him a remarkable confirmation of the conclusion he announced at the recent meeting of the British Association, that the Coccoliths and Coccospheres are embedded in a living expanse of protoplasmic substance, to which they bear the same relation as the *spicules* of sponges or of *Radiolaria* do to the soft parts of those animals. Thus it would seem that the whole mass of this mud is penetrated by a living organism of a type even lower, because less definite, than that of sponges and *Rhizopods;* and to this organism Prof. Huxley has given the name of *Bathybius.* This calcareous mud, composed partly of these bodies and partly of living *Globigerinæ*, has been compared to the great chalk formation, and the reporters thus compare the animals found living in it with the marine fauna of the Cretaceous period:—

"Among Mollusca we have two *Terebratulidæ*, of which one at least (*Terebratulina caput-serpentis*) may be certainly identified with a Cretaceous species, whilst the second (*Waldheimia cranium*) may be fairly regarded as representing, if not lineally descended from, another of the types of that family so abundant in the Chalk. Among *Echinoderms* we have the little *Rhizocrinus*, that carries us back to the *Apiocrinite* tribe, which flourished in the Oolitic period, and which was until lately supposed to have had its last representative in the *Bourgetticrinus* of the Chalk. Among zoophytes, the *Oculina* we met with in a living state seems generically allied to a Cretaceous type (*O. explanata* of Michelin), and the remarkable abundance of sponges, which not improbably derive their nutriment from the protoplasmic substance that enters largely into the composition of the calcareous mud wherein they are embedded, is a pre-eminently conspicuous feature of resemblance. It can scarcely be doubted that a more systematic examination of the remarkable formation at present in progress would place in a still stronger light the relationship of its fauna to that of the Cretaceous period; since the specimens which our few dredgefuls contained can only be considered as a mere sample of the varied forms of animal life which this part of the ocean bottom sustains,—its 'Urschleim' being both physically and physiologically the foundation of the whole."

The authors also refer to deep sea forms found in the Mediterranean:

"That bivalve and gasteropod molluscs, as well as zoophytes, can exist at depths even exceeding that just named, has been clearly proved by the remarkable observation of M. Alphonse Milne-Edwards (which does not seem to receive the attention it merits), that when the submarine telegraph cable between Sardinia and Algiers was taken up some years since for repairs, several living polyparies and molluscs were attached to portions of it which had been submerged to a depth of from 1093 to 1577 fathoms. Of these, some had been previously considered very rare, or had been altogether unknown, whilst others were only known in a fossil state, as belonging to the fauna of the later tertiaries of the Mediterranean basin."—*Scientific Opinion.*

HONEY BEES KILLED BY POLLEN.—In an article in the NATURALIST for February on "Honey-bees killed by Silk-weed Pollen," you say "we have never before heard of an insect actually losing its life from this cause." In 1860 my attention was called to the same fact; many hives had their stocks seriously reduced from this cause. On a single specimen I counted over one hundred pollen masses attached to the claws and legs. When the claws are thus fettered, the bee cannot climb upon the combs nor collect honey, and is soon expelled from the hive and must die. The unfettered bees tumble them out with little ceremony. As the common silk-weed (milk-weed we call it here) needs insect aid to free its pollen masses, and thus secure the fertilization of the stigma, there are peculiarities in the structure of the flower to secure this result; and for this purpose the pollen masses are attached to a *cleft* gland. When the insect visits the flower to secure its honey, of which there is an abundance, it must step or the gland to reach the nectary, and a hair or claw entering the cleft becomes fast. To free itself the insect must pull out the gland with the pollen attached or remain and die; and the latter is really the fate of many small flies and moths.—J. KIRKPATRICK, *Cleveland, Ohio.*

LINGULA FOUND LIVING IN CALIFORNIA.—Mr. Tryon announced that Dr. W. Newcomb had dredged at Monterey, California, one living specimen of *Lingula albida* Sowb., which is probably the northern limit of the species, and not in accordance with the general rule of distribution.—*Proceedings of the Conchological Section of the Philadelphia Academy of Natural Sciences.*

## GEOLOGY.

PREHISTORIC PICTURES OF THE CAVE HORSE IN FRANCE.—Prof. Owen states that outlines of the head of different individuals of the cave horse when alive, neatly cut on the smooth surface of a rib of the same species, have been discovered by the Vicomte de Lastic St. Jal, in 1863, in his cavern at Bruniquel, under circumstances which indisputably showed the work to have been done by one of the tribe of men inhabiting the cavern, and slaying the wild horses of that locality and period for food.—*Scientific Opinion.*